
The New Norm: Westchester County Residents' Risk Perceptions and Experiences Before and After Local Coyote Attacks



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EXECUTIVE SUMMARY

In this report we summarize findings from telephone surveys of Westchester County residents conducted in Fall 2006, Fall 2010 and Winter 2011. We describe coyote-related attitudes, experiences and risk perceptions in Westchester County before and after two children in the county were injured by coyotes. All data were collected in two study areas having different configurations of open space and residential development density that may affect the nature and extent of human-coyote interactions. The northern study area (adjacent towns of Somers and Yorktown) retained a rural character. The southern study area (adjacent towns of Mount Pleasant and Greenburgh) were more heavily developed. Telephone surveys were completed in fall 2006, fall 2010 and winter 2011. Respondents answered a series of 41 questions repeated in each study. Over 90% of all 2010 and 2011 respondents were aware of the 2010 coyote attacks and nearly all gained that awareness through media exposure. Multiple results indicate that concern about coyote-related risks, particularly risks to children, increased in 2010, but remained at an elevated level in 2011. Collectively, the findings lead us to hypothesize that residents' awareness that threats to children were real (rather than a hypothetical possibility) created a new psychological impact (i.e., worry about risks to children) and elevated concern and risk perceptions to a new norm. The proportion of respondents who saw coyotes or had problem interactions with coyotes remained about the same between Fall 2006 and Winter 2011, indicating that people were experiencing the same objective level of coyote-related risk. But with new information, conveyed via mass media and interpersonal communication, some residents may have come to perceive that threats to child safety had become a real possibility.

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INTRODUCTION

Reports of negative interactions between humans and coyotes (*Canis latrans*) in residential areas appear to be increasing in a number of metropolitan areas across the United States. As a consequence, several state wildlife agencies are considering actions they might take to reduce negative impacts associated with the presence of suburban coyotes. Little research has been conducted on this topic, so wildlife agencies have limited scientific information on which to base programmatic decisions. Filling information gaps on human-coyote interactions has been identified as a research priority in New York State (NY), where wildlife managers have noted an increase in frequency of citizens reporting incidents involving coyotes to the New York State Department of Environmental Conservation (DEC).

In 2006, DEC provided funding to initiate a multi-year study of human-coyote interactions in suburban areas of NY. The overall study was designed to improve understanding of both the ecological and human dimensions (HD) components of human-coyote interactions. The 2006 work was designed to: (1) increase understanding about the extent and nature of human-coyote interactions within a suburban community in NY; (2) characterize underlying attitudes of the community toward suburban coyotes; (3) measure risk perception of community residents with respect to coyotes; and (4) increase understanding of the factors that influence coyote-related attitudes and risk perceptions.

Based on reports of human-coyote interactions, a DEC contact team (study advisory committee) identified Westchester County as a priority area for research. In 2006, staff in the Human Dimensions Research Unit (HDRU) at Cornell University designed a telephone survey instrument and collected data on risk perceptions related to coyotes in two portions of Westchester County, where DEC was receiving an increasing number of reports about human-coyote interactions (Wieczorek Hudenko et al. 2008a, 2008b, 2008c). This multi-year project ended in March 2009.

In fiscal year 2010, DEC funded a research project focused on understanding wildlife-related risk perceptions. The risk perception project, matched with funding from the Cornell University Agricultural Experiment Station, provided support for additional research on coyote-related risk perceptions.

In July 2010, two children in Westchester County were injured in attacks by coyotes. HDRU staff recognized that events in Westchester created a unique opportunity to learn about influences on risk perception. We surveyed a new sample of residents in the original study areas in 2010, to assess effects of these coyote attacks on residents' perceptions. We conducted a third telephone survey in early 2011, to assess whether any changes in perceptions persisted or faded over time. This sequence of studies allowed us to test hypotheses about change in risk perception after two widely-reported separate incidents, each involving a young child injured by a coyote. In addition to providing an opportunity to explore the effects of media priming on risk perception, these studies contribute to a growing information base about factors that influence carnivore-related risk perceptions (Siemer et al. 2009; Siemer et al. 2008, 2010; Wieczorek Hudenko et al. 2010). Cumulatively, this line of research can inform communication interventions to manage human-carnivore interactions in residential areas of New York.

The purpose of this document is to summarize findings from telephone surveys of Westchester County residents conducted in Fall 2006, Fall 2010 and Winter 2011. We compare results by year and study area to document coyote-related attitudes, experiences and risk perceptions in Westchester County before and after two events that involved coyote-related human injuries.

METHODS

Study Areas

We selected two study areas in Westchester County having different configurations of open space and residential development density that DEC and Cornell University biologists believed could affect the nature and extent of human-coyote interactions (Figure 1). The adjacent towns of Somers and Yorktown made up the northern study area; these towns retained a rural character. The adjacent towns of Mount Pleasant and Greenburgh made up the southern area; these towns were more heavily developed than the northern towns. Although both study areas are in the New York City metropolitan area and are suburban by most definitions, they are different from one another in several key respects (e.g., education, outdoor activity involvement) that the study team believed might influence attitudes, risk perceptions and experiences.

Survey Instruments

2006 survey. During the initial phase of the inquiry, semi-structured, face-to-face interviews were conducted with 40 Westchester County informants to identify saliency of topics identified *a priori* as the focus for a survey. Interviews were conducted between June 1 and July 21, 2006. HDRU staff used findings from that inquiry (Wieczorek Hudenko et al. 2008a, 2008b) to develop a telephone survey instrument to assess the experiences and attitudes of Westchester County residents.

We prepared a draft questionnaire that was reviewed and pre-tested by HDRU staff, members of the DEC contact team for the study, select Westchester County stakeholders, and staff with the study's cooperating partners (Cornell Cooperative Extension of Westchester County and Westchester County Department of Parks, Recreation and Conservation). Our final survey instrument (Wieczorek Hudenko et al. 2008b) contained 44 questions covering personal experience related to coyotes, attitudes, risk perceptions, behaviors, and respondent background characteristics. The Cornell University Institutional Review Board approved the questionnaire and research protocol (Protocol ID# 06-05-045).

The instrument had a routing question that directed interviewers to lead respondents to either a short or long version of the survey instrument. The short version contained questions focused on residents' level and mechanisms of awareness and extent of experience with coyotes. Respondents who expressed concern or interest based on the routing question proceeded with the in-depth questionnaire that explored the extent and nature of their concern.

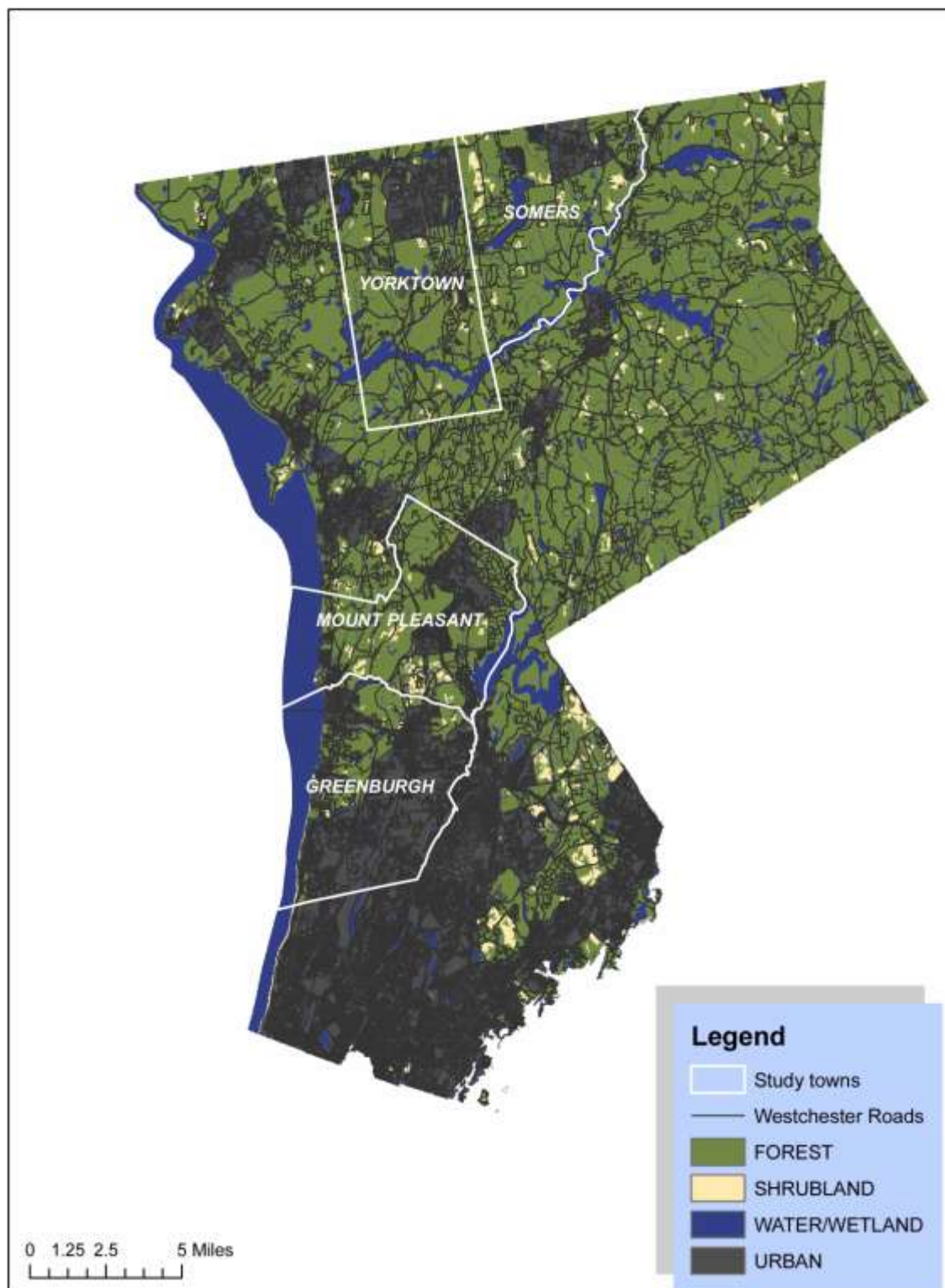


Figure 1. Westchester County townships designated as sampling areas for the 2006, 2010 and 2011 Westchester County resident telephone surveys.

2010 and 2011 surveys. We designed a modified version of the 2006 survey instrument for use in the 2010 and 2011 surveys. The revised instruments dropped a few questions about respondent characteristics and added questions to measure awareness of coyote attacks on two youth in Westchester County in the summer of 2010. Our final survey instrument (available from the authors by request) contained 41 questions covering the same content addressed in 2006. The Cornell University Institutional Review Board approved the questionnaires and research protocols for both surveys (Protocol ID numbers 06-05-045, 1006001472, and 1006001472A008).

Sampling and Survey Implementation

We subcontracted with the Survey Research Institute (SRI) at Cornell University to conduct the surveys. SRI sampled the same census tracts in all three studies. In each case SRI obtained a listed sample of Westchester County residents in the four study townships from commercial sampling firms (Genesys Sampling Systems in 2006, The Marketing Systems Group in 2010 and 2011).

Data collection occurred between October 10 and November 3, 2006 (Fall '06), between August 30 and October 17, 2010 (Fall '10), and between January 18 and March 2, 2011 (Winter '11). In each survey SRI was asked to continue contacting residents until they completed approximately 600 interviews in each study area. Final outcomes of contacts with study area residents are described in Table 1.

Analysis

Our analysis focused on detecting if change occurred in coyote-related attitudes, experiences, and perceptions between study periods. Based on mass media effects and risk communication theories, we expected amplification following the attacks on children in the summer of 2010, then decay to earlier norms of concern levels prior to those events. That would be the predicted pattern of effects, and therefore our hypothesis. What we suspected, however, based on the Fall 2006 study was that concerns would not go back to pre-event levels, but plateau at some level between that level and the heightened concern period we anticipated immediately following the attacks.

We used the Statistical Package for Social Science (SPSS) to conduct statistical analyses. We used chi-square tests to assess differences between groups. Differences are reported at the $p < 0.05$ level of significance. To test hypotheses related to risk perception and other variables, we compared Fall 2006, Fall 2010 and Winter 2011 respondents by study area (northern study area: towns of Somers and Yorktown; southern study area: towns of Mount Pleasant and Greenburgh).

RESULTS

Respondents' personal traits and patterns of wildlife-related activity involvement were similar across studies, increasing our confidence that the datasets were generated from comparable samples of residents in the study areas. In both the northern and southern study

Table 1. Summary of Survey Research Institute contacts with members of the sample group during the 2006, 2010 and 2011 Westchester County resident telephone surveys.

Final outcome of contacts with residents	2006 survey		2010 survey		2011 survey	
	Northern area	Southern area	Northern area	Southern area	Northern area	Southern area
Completed survey	580	580	600	600	600	600
–Total						
Full interview	287	310	384	387	370	366
Short interview	293	270	216	213	230	234
Bad telephone number—not in service	224	259	207	261	193	218
Too ill—Incapable of responding	22	6	15	9	15	11
Language barrier	27	49	11	36	9	32
Refused to participate	110	60	115	73	84	89
Pending (resident not reached after one or more attempts)	2037	1445	1552	1674	1482	1400
Total	3000	2399	2500	2653	2383	2350

areas, the samples drawn were similar in gender, education, years of residence in Westchester County, pet ownership, and participation in bird/wildlife feeding, and mean age (Tables 2-4). There were four differences between the respondent groups between 2006 and 2010, and between 2010 and 2011 by study areas.

- In the northern area, more respondents had children in the home in 2006 when compared to 2010 (17.6% vs. 11.8%, chi square = 7.687, $p = 0.006$) (Table 2).
- In the southern area, fewer respondents hunted in 2010 when compared to 2011 (2.2% vs. 5.7%, chi square = 9.586, $p = 0.002$) (Table 2).
- In the southern area, fewer respondents lived in a town or city in 2006 when compared to 2010 (12.7% vs. 20.7%, chi square = 15.223, $p < 0.001$) (Table 3).
- In the southern area, mean age of respondents differed between 2006 and 2010, and between 2010 and 2011 (Table 4).

Table 2. Comparison of demographic characteristics and household traits for survey respondents, by study area and year (2006 and 2010).

		Northern study area ¹			Southern study area ¹		
		2006	2010	2011	2006	2010	2011
		(n) %	(n) %	(n) %	(n) %	(n) %	(n) %
Gender		(580)	(600)	(600)	(580)	(600)	(600)
	Female	52.2	50.7	52.5	55.5	56.3	51.7
	Male	47.8	49.3	47.5	44.5	43.7	48.3
Education		(564)	(581)	(588)	(573)	(584)	(591)
< High school		0.7	1.7	1.7	0.9	1.5	1.2
HS or GED		15.4	12.6	10.4	9.2	9.4	11.0
Voc./trade school		1.2	1.5	1.2	0.5	0.9	1.9
Some college		10.1	9.6	9.0	7.9	7.9	11.3
2-year degree		9.8	8.4	7.8	5.8	4.5	5.6
4-year degree		27.8	31.8	33.2	29.7	30.8	29.8
Graduate school		34.9	34.3	36.7	46.1	45.0	39.3
Children in home		(575)	(592)	(594)	(577)	(596)	(597)
Yes		17.6^a	11.8^a	12.5	14.9	13.6	10.9
Dog in home		(577)	(594)	(598)	(580)	(597)	(598)
Yes		32.6	35.7	38.8	27.2	31.3	30.3
Cat in home		(577)	(594)	(599)	(580)	(596)	(598)
Yes		26.7	24.2	19.7	21.6	21.3	18.2
Feed birds/wildlife		(576)	(595)	(599)	(579)	(594)	(598)
Yes		48.3	51.1	47.4	38.0	35.7	40.3
Hunted in past 5 yrs		(578)	(594)	(599)	(563)	(580)	(598)
Yes		4.3	6.4	5.8	2.9	2.2^a	5.7^a

¹ Columns with the same letter (a-a) are significantly different at $p < 0.05$.

Table 3. Residency characteristics, by study area and year (2006 and 2010).

	Northern study area ¹			Southern study area ¹		
	2006	2010	2011	2006	2010	2011
	(n) %	(n) %	(n) %	(n) %	(n) %	(n) %
Years in county	(577)	(598)	(597)	(579)	(596)	(598)
< 1 year	1.0	0.7	1.2	0.5	0.7	1.0
1-5 years	7.3	4.5	3.2	7.3	6.4	5.9
6-10 years	9.5	8.7	8.2	11.6	10.6	10.9
11-20 years	21.5	22.2	21.4	20.2	23.0	26.6
> 20 years	60.7	63.9	66.0	60.4	59.4	55.7
Description of area where you live	(576)	(597)	(598)	(577)	(598)	(599)
Town or city	7.8	11.2	14.7	12.7^a	20.7^a	20.2
Suburban area	55.4	57.0	57.7	71.8	67.4	65.8
Outside of town	36.8	31.8	27.6	15.6	11.9	14.0

Table 4. Age of study participants, by study area and year (2006 - 2011).

Study area	Year	N	Mean age ²	SD	t	df	p- value
North	2006	555	53.96^a	15.935	-2.892	1127	0.004
	2010	574	56.58^{ab}	14.447	2.083	1149	0.038
	2011	577	54.80^b	14.569			
South	2006	546	54.77	14.013	1.654	1118	0.098
	2010	574	53.33	15.065	0.796	1155	0.426
	2011	583	52.62	15.201			

¹ Columns with the same letter (a-a) are significantly different at $p < 0.05$.² Columns with the same letter (a-a, b-b) are significantly different at $p < 0.05$.

Awareness of Coyote Presence

In 2006, most respondents were aware that coyotes lived in New York, including Westchester County. The proportion who were aware of coyotes increased between 2006 and 2010 in both study areas (Table 5). Compared to 2006, 2010 respondents in both study areas were (a) more likely to be aware that coyotes were present in New York State, (b) more likely to be aware that coyotes lived in Westchester County, and (c) more likely to report that they became aware of coyotes from news media. Awareness of coyotes as a result of personal experience was unchanged between Fall 2006 and Fall 2010.

We found fewer differences in awareness between 2010 and 2011. In the northern study area, we found no significant differences between Fall 2010 and Winter 2011 on awareness of coyotes or sources of that awareness (Table 5). In the southern study area we found two differences: fewer 2011 respondents became aware of coyotes in the county via news reports (81.1% vs. 85.6%, chi square = 4.034, $p = 0.045$) and more 2011 respondents became aware of coyotes in the county through personal experience (60.2 % vs. 51.5%, chi square = 8.413, $p = 0.004$) (Table 5).

Interactions with Coyotes

These surveys documented that it was relatively common for residents of these townships to occasionally see a coyote in their area. Yet, the data from all three surveys suggests a low and stable level of problem interactions between people and coyotes in the study areas.

The majority of residents who had seen a coyote in Westchester County (from 46% to 66%, depending on the year and study area) also said they had seen a coyote near their residence. Few of those who had seen a coyote said that they reported a significant interaction with coyotes or had an interaction that they perceived as problematic.

Three measures of interaction between Westchester residents and coyotes remained stable across all three surveys. In both study areas the proportion of residents who “had a problem with coyotes,” reported an interaction with coyotes, or perceived that they had been in a situation where a pet was threatened by a coyote were not significantly different in Fall 2006 vs. Fall 2010 (Table 6), or in Fall 2010 vs. Winter 2011 (Table 6).

There were a few differences between 2006 and 2010 with regard to: seeing a coyote in the county, seeing a coyote near one’s residence, and being in a situation perceived as threatening to a person. In the northern zone, the proportion of respondents who had seen a coyote near their residence was higher in 2010 than in 2006 (76.9% vs. 67.7%, chi square = 7.09, $p = 0.008$) (Table 6). In the southern study area, the proportion of respondents who had seen a coyote in their county was higher in 2010 than in 2006 (56.3% vs. 46.6%, chi square 9.52, $p = 0.002$) and also was higher in 2011 than in 2010 (54.4% vs. 46.6%, chi square = 6.664, $p = 0.010$) (Table 6). Most notably, in both study areas the proportion of respondents who said they had been in a situation that they felt was threatening to a person was higher in 2010 than in 2006 (Table 6).

Table 5. Awareness of coyote presence in New York and in Westchester County, by study area and year (2006 and 2010).

	Northern study area ¹			Southern study area ¹		
	2006	2010	2011	2006	2010	2011
	(n) %	(n) %	(n) %	(n) %	(n) %	(n) %
Aware of coyotes in New York	(578) 95.0^a	(600) 97.8^a	(599) 97.7	(579) 92.2^a	(599) 96.2^a	(600) 95.0
Aware of coyotes in Westchester County	(544) 92.1^a	(587) 96.6^a	(561) 96.1	(533) 90.8^a	(575) 94.3^a	(569) 95.8
Aware from news	(498) 61.4^a	(566) 80.4^a	(560) 78.8	(481) 75.7^a	(542) 85.6^{ab}	(544) 81.1^b
Aware from other people	(501) 71.1^a	(567) 62.1^a	(560) 65.2	(481) 65.7	(542) 62.2	(543) 60.6
Aware from personal experience	(500) 66.6	(564) 66.5	(558) 69.4	(483) 56.9	(542) 51.5^a	(543) 60.2^a

¹ Columns with the same letter (a-a, b-b) are significantly different at $p < 0.05$.

Table 6. Experiences with coyotes, by study area and year (2006 and 2010).

	Northern study area ¹			Southern study area ¹		
	2006	2010	2011	2006	2010	2011
	(n) %	(n) %	(n) %	(n) %	(n) %	(n) %
Have seen a coyote in their county	(497) 66.0	(561) 62.4	(555) 62.3	(480) 56.3^a	(539) 46.6^{ab}	(544) 54.4^{ab}
Have seen a coyote near their residence	(325) 67.7^a	(350) 76.9^a	(346) 79.8	(265) 71.3	(249) 67.1	(293) 74.4
Have had a problem with coyotes	(328) 7.9	(350) 10.3	(346) 12.4	(270) 6.7	(251) 9.6	(296) 6.1
Have reported a an interaction	(328) 7.7	(350) 11.7	(346) 11.3	(267) 15.0	(251) 16.3	(296) 14.5
Have been in a situation perceived as threatening to a pet	(282) 19.5	(384) 22.9	(370) 24.1	(301) 20.3	(386) 15.5	(366) 19.9
Have been in a situation perceived as threatening to a person	(282) 7.4^a	(384) 13.8^a	(370) 14.3	(306) 7.2^a	(387) 13.7^a	(366) 16.9

Reported sightings of coyotes changed in one study area between Fall 2010 and Winter 2011. Compared to 2010, 2011 respondents in the southern study were more likely to have seen a coyote in their county. Yet, there was no significant difference between 2010 and 2011 respondents with regard to the proportion who felt they had been in a situation that threatened a pet or a person (Table 6).

Nature of problem interactions with coyotes. The actual number of residents who said they had experienced a problem interaction with a coyote was very small in all three surveys (Table 7). Those who said they had had a problem with a coyote were asked, “What was the nature of the problem?” and their response was coded into one of six categories (Table 7). The majority of those who said they had a problem with coyotes described the problem as simply having a coyote near their home (Table 7), indicating that for many the presence of coyotes is

¹ Columns with the same letter (a-a, b-b) are significantly different at $p < 0.05$.

perceived to represent some kind of threat. The next most common problem description was a threat to the respondent's pet (s). Very few respondents described their problem experience as a threat to the safety of an adult or a child (Table 7).

Table 7. Self-reported experiences with coyotes among respondents who had seen a coyote in Westchester County, by study area and year (2006-2011).

		Northern study area			Southern study area		
		2006	2010	2011	2006	2010	2011
Have had a problem with coyotes near their home	(N)	(328)	(350)	(346)	(270)	(251)	(296)
	(n)	(26)	(36)	(43)	(18)	(24)	(18)
	%	7.9	10.3	12.4	6.7	9.6	6.1
Problem description - coyote near respondent's home	(N)	(26)	(36)	(43)	(18)	(24)	(18)
	(n)	(21)	(29)	(34)	(13)	(16)	(13)
	%	80.8	80.6	79.1	72.2	66.7	72.2
Problem description - coyote threatened a pet	(N)	(26)	(36)	(43)	(18)	(24)	(18)
	(n)	(14)	(19)	(22)	(8)	(10)	(10)
	%	53.8	52.8	51.2	44.4	41.7	55.6
Problem description - coyote nuisance behavior	(N)	(26)	(36)	(43)	(18)	(24)	(18)
	(n)	(9)	(11)	(9)	(5)	(5)	(5)
	%	34.6	30.6	20.9	27.8	20.8	27.8
Problem description - coyote threatened an adult	(N)	(26)	(36)	(43)	(18)	(24)	(18)
	(n)	(2)	(5)	(1)	(1)	(4)	(2)
	%	7.7	13.9	2.3	5.6	16.6	11.1
Problem description - coyote threatened a child	(N)	(26)	(36)	(43)	(18)	(24)	(18)
	(n)	(0)	(0)	(4)	(1)	(0)	(5)
	%	0.0	0.0	9.3	5.6	0.0	27.8
Problem description- other	(N)	(26)	(36)	(43)	(18)	(24)	(18)
	(n)	(3)	(7)	(9)	(4)	(4)	(1)
	%	11.5	19.4	20.9	22.2	16.7	5.6

Awareness of Coyote-Related Human Injuries in Rye, NY

In Fall 2010, most respondents were aware that pets or humans had been injured by coyotes in Westchester County during the previous year. More than 90% were aware of the coyote attacks on two children in Rye, NY earlier that year. Nearly all respondents said that they became aware of the events in Rye through news media reports. We found no difference between study areas with respect to awareness of these events (column 1-2, Table 8).

We found that awareness of coyote-related pet and human injuries in Westchester County decreased slightly between Fall 2010 and Winter 2011 in both study areas. Awareness of incidents where children or pets in the county were injured in 2010 was slightly lower in Winter 2011 in the northern study area (71.6% vs. 83.1%, chi square = 21.702, $p < 0.001$) and the southern study area (69.8% vs. 79.1%, chi square = 13.643, $p < 0.001$). Awareness of the coyote-related human injuries in Rye, NY was slightly lower in Winter 2011 in the northern study area (90.4% vs. 94.1%, chi square = 4.592, $p < 0.001$) (Table 8).

Attitude Toward Coyote Presence in Westchester County

A measure of overall attitude toward coyotes served as a screening question to route respondents to a full or abbreviated interview. The item had two response categories that indicated no concern about coyotes: “I enjoy knowing coyotes are around, and I do not worry about problems coyotes may cause,” and “I have no particular opinions about coyotes in Westchester.” The other two response options implied a measure of concern: “I enjoy knowing coyotes are around, but I worry about problems coyotes may cause,” and “I do not enjoy knowing coyotes are around and regard them as a nuisance.”

About half of all respondents indicated some concern about coyotes or regarded coyotes as a nuisance in Fall 2006. The percentage of respondents in those categories rose significantly in Fall 2010. In the northern area the proportion of respondents who worried about coyote-related problems climbed from 49.0% to 64.0% (chi square 26.750, p value < 0.001); in the southern area the proportion of respondents who worried climbed from 53.0% to 65.0% (chi square 17.640, p value < 0.001). There were no significant differences on this question in either study area between Fall 2010 and Winter 2011 (Table 9).

In-depth Survey: Attitudes, Risk Perceptions, and Tolerance for Coyote Presence

Respondents who expressed worry about coyote-related problems or regarded coyotes as a nuisance were asked to provide additional information about their attitudes and perceptions. We compared the data from each survey to identify changes in those attitudes and perceptions.

In 2006, three of four respondents who completed the in-depth questionnaire expressed general concern about coyote presence in the area. The proportion of respondents who expressed such concern increased between Fall 2006 and Fall 2010 in the northern study area (75.1% vs. 82.4%, chi square = 5.248, p value = 0.022). The proportion who said they were pleased to have coyotes in their area declined in the northern study area (32.5% vs. 24.0%, chi square = 5.53, p value = 0.019). Most respondents in both study areas were concerned about threats to pet safety,

Table 8. Awareness of coyote-related events in Westchester County and the Township of Rye, by study area and year (2010 and 2011).

		2010 Survey		Northern study area		Southern study area	
		Northern Area	Southern Area	2010	2011	2010	2011
		(n) %	(n) %	(n) %	(n) %	(n) %	(n) %
Were aware of incidents in the county where children or pets were injured by coyotes in 2010		(596)	(598)	(596)	(595)	(598)	(599)
	Yes	83.1	79.1	83.1^a	71.8^a	79.1^a	69.8^a
	No	16.9	20.9	16.9	28.2	20.9	30.2
Were aware that two children in the Town of Rye, New York had been injured by coyotes		(493)	(472)	(493)	(425)	(472)	(415)
	Yes	94.1	91.7	94.1^a	90.4^a	91.7	90.6
	No	5.9	8.3	5.9	9.6	8.3	9.4
Aware of incidents in Rye from exposure to news reports		(464)	(433)	(463)	(383)	(433)	(374)
	Yes	97.4	98.6	97.4	98.2	98.6	98.7
	No	2.6	1.4	2.6	1.8	1.4	1.3
Were aware of events in Rye by talking with other people (e.g., friends, family, neighbors)		(463)	(432)	(463)	(383)	(432)	(375)
	Yes	43.2	45.4	43.2	45.4	45.4	49.9
	No	56.8	54.6	56.8	54.6	54.6	50.1

Table 9. Attitude toward coyote presence in Westchester County in northern and southern study sites, 2006 - 2011.

	Northern study area			Southern study area		
	2006	2010	2011	2006	2010	2011
	(n=575)	(n=600)	(n=599)	(n=574)	(n=600)	(n=599)
	%	%		%	%	
Enjoy coyotes without worry	30.6	18.2	19.4	24.0	16.8	19.7
Enjoy but worry about problems	27.1	32.3	34.6	26.7	32.3	28.7
Do not enjoy; regard them as a nuisance	21.9	31.7	27.2	26.3	32.8	32.4
No opinions about coyotes in the county	20.3	17.8	18.9	23.0	18.2	19.2
total	100.0	100.0	100.0	100.0	100.0	100.0

but the level of concern expressed about pets was stable between Fall 2006 and Winter 2011. In contrast, the proportion of respondents who expressed great concern about threat to small children increased between Fall 2006 and fall 2010 in both study areas (north: 37.0 vs. 49.9%, chi square = 13.929, p value = 0.001; south: 37.9 vs. 49.1, chi square = 10.236, p value = 0.006) (Table 10).

Level of concern, as expressed in the responses reported in Table 10, remained unchanged between Fall 2010 and Winter 2011 with one exception: concern about coyote presence in the area increased in the southern study area (79.9% vs. 86.0%, chi square = 4.807, p value = 0.028). Thus, contrary to our theory-based hypothesis, the expected and documented rise in concern immediately following the events during summer of 2010 (measured early Fall 2010), did not return to pre-event levels.

Acceptability of risk to pets or people. Respondents who worried about problems coyotes may cause were asked whether coyote-related risks to pets and people were acceptably low. This question represented a measure of acceptance capacity related to coyote presence. We found no significant difference on acceptability of risk to pets between Fall 2006 and Fall 2010, or between Fall 2010 and Winter 2011. In contrast, the proportion of respondents who agreed that the risk to humans was acceptably low declined between Fall 2006 and Fall 2010 in both study areas (north: 72.3% vs. 50.0%, chi square = 30.84, p value < 0.001; south: 69.4% vs. 48.9%, chi square = 26.95, p value < 0.001). We found no significant change between Fall 2010 and Winter 2011 on acceptability of risk to humans (Table 11).

Table 10. Attitudes toward coyote presence in Westchester County, by study area and year (2006 – 2011).

	Northern study area			Southern study area		
	2006	2010	2011	2006	2010	2011
	(n) %	(n) %	(n) %	(n) %	(n) %	(n) %
I am pleased that coyotes live in my area	(271)	(366)	(352)	(286)	(366)	(360)
Agree/Strongly Agree	32.5^a	24.0^a	23.3	21.0	20.2	18.1
Disagree/Strongly Disagree	67.5	76.0	76.7	79.0	79.8	81.9
Coyotes are a valuable part of the wildlife in my area	(256)	(358)	(334)	(272)	(358)	(333)
Agree/Strongly Agree	57.4	53.4	59.0	51.5	47.5	50.8
Disagree/Strongly Disagree	42.6	46.6	41.0	48.5	52.2	49.2
I am concerned about the presence of coyotes in my area	(277)	(381)	(369)	(299)	(383)	(363)
Agree/Agree Strongly	75.1^a	82.4^a	77.0	79.3	79.9^a	86.0^a
Disagree/Strongly Disagree	24.9	17.6	23.0	20.7	20.1	14.0
Level of concern about threat to pets	(281)	(384)	(370)	(303)	(385)	(365)
No concern	13.2	10.2	10.8	17.8	14.3	13.2
Some concern	61.2	59.1	62.4	54.5	57.1	56.2
Great concern	25.6	30.7	26.8	27.7	28.6	30.7
Level of concern about threat to small children	(281)	(383)	(370)	(298)	(385)	(366)
No concern	13.2	7.0	9.5	14.1	8.8	10.7
Some concern	49.8	43.1	45.1	48.0	42.1	39.9
Great concern	37.0^a	49.9^a	45.4	37.9^a	49.1^a	49.5

Table 11. Acceptability or risk to pets and children in Westchester County, by study area and year (2006-2011).

	Northern study area			Southern study area		
	2006	2010	2011	2006	2010	2011
	(n) %	(n) %	(n) %	(n) %	(n) %	(n) %
“The likelihood that a pet in Westchester County will be injured by a coyote is acceptably low”	(245)	(364)	(340)	(259)	(370)	(332)
Agree/Strongly Agree	46.9	39.6	37.1	40.9	39.2	34.6
Disagree/Strongly Disagree	53.1	60.4	62.9	59.1	60.8	65.4
“The likelihood that a person in Westchester County will be injured by a coyote is acceptably low”	(256)	(364)	(345)	(271)	(378)	(348)
Agree/Strongly Agree.	72.3^a	50.0^a	56.8	69.4^a	48.9^a	49.7
Disagree/Strongly Disagree	27.7	50.0	43.2	30.6	51.1	50.3

We queried respondents who had concerns about coyotes on a series of six scenarios representing different frequencies and proximities of interactions with coyotes. Frequency measures included occasional and regular presence of coyote. Proximity measures ranged from Westchester County in general, to within the respondent’s town, and within the respondent’s yard. The results for this series of questions indicate that aside from occasionally observing coyotes in natural areas, most residents who worry about coyote-related problems are concerned about the presence of coyotes in any context other than in open space areas of the county (Table 12). Concern levels about interactions with coyotes at various levels of proximity and frequency did not change between Fall 2006 and Winter 2011 (one exception was an increase between Fall 2006 and Fall 2010 in the northern study area, where the proportion of respondents who expressed concern about seeing coyotes regularly in one’s township increased from 89.7% to 94.5% [chi square = 5.355, p value = 0.021]) (Table 12).

Table 12. Concern about coyote encounters at different levels of frequency and proximity, by study area and year (2006-2011).

	Northern study area			Southern study area		
	2006	2010	2011	2006	2010	2011
Expected response if you...	(n) %	(n) %	(n) %	(n) %	(n) %	(n) %
Occasional observe coyotes in Natural areas or green spaces within Westchester County	(281)	(379)	(369)	(302)	(386)	(365)
Be pleased/Not care	60.5	57.5	66.4	53.0	56.0	58.4
Be concerned	39.5	42.5	33.6	47.0	44.0	41.6
Occasional observe coyotes within your township	(280)	(381)	(370)	(303)	(386)	(364)
Be pleased/Not care	24.6	20.5	76.2	14.9	15.3	14.8
Be concerned	75.4	79.5	76.2	85.1	84.7	85.2
Regularly observe coyotes within your township	(281)	(381)	(369)	(304)	(386)	(363)
Be pleased/Not care	10.3	5.5	10.3	7.2	5.2	6.1
Be concerned	89.7^a	94.5^a	89.7	92.8	94.8	93.9
Occasional observe coyotes Passing through your backyard	(282)	(381)	(370)	(303)	(387)	(365)
Be pleased/Not care	15.2	14.7	14.3	10.6	10.1	7.9
Be concerned	84.8	85.3	85.7	89.4	89.9	92.1
Regularly observe coyotes in your backyard	(281)	(381)	(370)	(304)	(387)	(365)
Be pleased/Not care	4.6	5.8	5.9	4.6	2.6	3.8
Be concerned	95.4	94.2	94.1	95.4	97.4	96.2

DISCUSSION

- Human-wildlife interactions become newsworthy when perceived barriers between people and wildlife are breached (Corbett 1995). News stories about wildlife often focus on negative wildlife-human interactions (Corbett 1992) and coverage increases after a dramatic event, such as a wildlife-related human injury or fatality (Wolch et al. 1997). The data presented in this report illustrate those points. The coyote attacks in summer 2010 received widespread media coverage. Nearly all respondents to our Fall 2010 survey gained awareness of those events through exposure to mass media.
- A main finding of this study is that awareness of a safety threat created through media exposure can change perception of risk for some suburban residents, at least in the short term. We found no change in level of concern about threats to pets (concern about pets was already high in Fall 2006, but remained stable). We did observe an increase in concern about threats to people. Those findings are consistent with the hypothesis that changes in concern were associated with media coverage, which focused on a new threat to human safety. In Fall 2006 residents were aware that coyotes could harm pets, but the possibility of harm to people was a hypothetical risk until the events during summer of 2010.
- Coyote attacks on people are extremely rare in New York (the objective threat associated with wildlife attacks is extremely low). But research indicates that people tend to overestimate rare risks (and underestimate common risks) (Fischhoff et al. 1981, Hakes and Viscusi 2004). The attacks on children in Westchester County in July 2010, may have changed local residents' estimates of the probability (likelihood) of coyote-related injuries to people. Attacks on pets may reinforce overestimates of risk to children.
- Residents' perceptions of the *nature* of the risk may have been altered by the coyote attacks on people in 2010. Dread of an event increases when the event is novel, when the consequences that perceived as immediate and serious or catastrophic, and when one is subjected to the risk involuntarily (Slovic 1987). The fact that children were harmed may have increased the sense of outrage that is part of affective risk perception (Sandman 2004).
- News stories have the potential to influence public perceptions about wildlife-related problems and how those problems might be managed. We hypothesized that media coverage of coyote attacks in Westchester would have a priming effect on residents' perceptions, making human safety salient and thus raising concern about human safety in an area occupied by coyotes. The changes in concern, risk perceptions, and acceptability of risk to humans that we observed between Fall 2006 and Fall 2010 were consistent with that hypothesis. On the other hand, we hypothesized that elevated concerns and risk perceptions would decline in Winter 2011, as awareness about the July 2010 incidents faded. Though we observed a few results consistent with that hypothesis, most of the data suggest that concerns and risk perceptions persisted at the higher, Fall 2010 levels. This leads to an alternative hypothesis: residents' awareness that threats to children were real (rather than a hypothetical possibility) created a new psychological impact (i.e., worry about risks to children) and elevated concern and risk perceptions to a new norm. Objectively, people were experiencing the same level of interactions with coyotes (e.g., the proportion who saw coyotes or had

problem interactions with coyotes remained about the same between Fall 2006 and Winter 2011), but with new information some residents may have come to perceive that threats to child safety had become a real possibility. We also found evidence that some residents began to evaluate their experiences differently (i.e., more reported that they felt they had been in a situation that could threaten human safety). We hypothesize that having new information about the safety threats associated with human-coyote interactions in the county led them to re-interpret their experiences with coyotes. New information gives people a new filter through which to view an event or interaction. We hypothesize that people who have had little personal experience with coyotes may be more influenced by media reports about coyote-related risks.

- We had expected to observe differences between study areas, in part because the southern study area was closer to the Town of Rye, where the human injuries occurred in July 2010. Some differences between study areas emerged, but we found more similarities than differences. Similarities between study areas might be explained by the fact that residents in both study areas were exposed to the same media reports about coyotes. Media exposure may have played a greater role than proximity to the July 2010 incidents.

MANAGEMENT IMPLICATIONS

- Coyote attacks as focusing events. Coyote attacks on people have the potential to become focusing events that draw public attention to coyote presence and coyote management. These events may raise public concerns about exposure to coyote-related threats. But they also create a window of opportunity for communication, as stakeholders seek and are receptive to information about a novel or previously unrecognized threat. If prepared, wildlife agencies can take advantage of that opportunity to reach community residents with problem prevention information.
- Expectations for agency response. As focusing events, coyote attacks on people also have the potential to raise public expectations for management response by DEC and other agencies (e.g., local police and government representatives). Lack of a visible response, or lack of communication with stakeholders that explains and publicizes agency response, may contribute to public outrage—an important facet of affective risk perception. Effective agency response, including an effective communication response after a coyote attack, has the potential to reduce public concerns and increase trust in the wildlife agency.
- Information and education. Stakeholders who gain the knowledge and skills necessary to reduce negative interactions with wildlife have a greater sense of control over exposure to wildlife-related risks (i.e., increased sense of self efficacy). Information and education (“I & E”) interventions are frequently recommended as a management response to problem interactions with wildlife, because they offer a *potential* means to give stakeholders greater capacity to manage their exposure to negative effects of human-wildlife interactions. The value of I & E interventions depend partly upon their ability to promote personal behavior

change (e.g., the degree to which they reduce behaviors that attract, habituate or food-condition wildlife). But human behavior is typically resistant to change. Wildlife-related I & E programs can raise awareness of issues and risk-reducing behaviors, but may produce only modest, temporary behavior change (for examples related to black bear management, see Gore et al. 2008 and Baruch-Mordo et al. 2011). Wildlife managers should maintain realistic expectations about the possible effects of I & E programs on stakeholder behavior. To enhance the utility of I & E interventions, I & E programs should be: (1) targeted toward specific audiences, (2) grounded in education, communication and behavior-change theory, and (3) monitored, evaluated and modified as necessary to achieve incremental changes in behavior.

Next Steps

Findings from this study raise a number of new research questions that we will pursue through additional analysis that goes beyond the immediate objectives of this project. HDRU staff will continue to focus research on carnivore-related risk perceptions as funding opportunities allow.

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Appendix A: Questionnaire, 2010 Telephone Survey

My name is _____. I am calling on behalf of Cornell University. We're contacting **Westchester County** residents for a study of **attitudes about coyotes**.

May I please talk to the adult who celebrated (his/her) birthday most recently?

As part of our effort to understand relationships between people and wildlife in Westchester County, I'd like to ask you a few questions to understand your opinions about coyotes. Would you be willing to participate in an interview on this topic? Your participation is voluntary, the information you provide is confidential, and none of it will be released in any way that would permit the identification of you or your family. It would take 5 to 15 minutes for the interview, depending upon your experiences.

- [1] yes, proceed
- [2] interview declined

1. About how many years have you lived in Westchester County? (Variable name: "Years living in WC") (INTERVIEWER: Let person respond, then place response in correct category)

- [1] Less than 1 year
- [2] 1-5 years
- [3] 6-10 years
- [4] 11-20 years
- [5] 21 or more years
- [8] don't know
- [9] refused to answer

2. Before I called you today, were you aware that coyotes live in New York State? (Variable name: "Aware of coyotes in NY")

- [1] yes
- [2] no --IF NO, SKIP TO QUESTION 12
- [8] don't know --SKIP TO QUESTION 12
- [9] refused to answer -- SKIP TO QUESTION 12

3. Were you aware that coyotes live in Westchester County? (Variable name: "Aware of coyotes in WC")

- [1] yes
- [2] no -- IF NO, SKIP TO QUESTION 12
- [8] don't know -- SKIP TO QUESTION 12
- [9] refused -- SKIP TO QUESTION 12

4. Do you know about coyotes in Westchester County:

4a. From news reports about coyotes (Variable name: "Aware from news")

- [1] yes
- [2] no
- [8] not sure
- [9] refused

4b. By talking with other people (like friends, family, neighbors) (Variable name: "Aware from other people")

- [1] yes
- [2] no
- [8] not sure
- [9] refused

4c. Through personal experience (hearing or seeing a coyote) (Variable name: "Aware from personal experience")

- [1] yes
- [2] no
- [8] not sure
- [9] refused

4d. Other (Variable name: "Aware from other source")

- [1] yes --(IF YES) HOW? 4e. _____
- [2] no
- [8] not sure
- [9] refused

5. Have you ever seen a coyote anywhere in Westchester County? (Variable name: "Ever seen coyote in WC")

- [1] yes
- [2] no -- IF NO, SKIP TO QUESTION 12
- [8] not sure -- IF NOT SURE, SKIP TO QUESTION 12
- [9] refused -- IF REFUSED, SKIP TO QUESTION 12

6. How many times have you seen coyote/s in Westchester County in the past 3 years? (Variable name: "# times saw a coyote")

- [1] once or twice
- [2] a few times (3-4)
- [3] more than a few times/regularly
- [8] not sure
- [9] refused

7. Have you ever seen a coyote near your residence in Westchester County? (Variable name: "Seen coyote near residence")

- [1] yes
- [2] no
- [3] not sure
- [9] refused

8. Have you ever had a problem with a coyote near your home in Westchester County? (Variable name: "Had problem with coyote")

- [1] yes
- [2] no --IF NO, SKIP TO QUESTION 10
- [8] not sure --IF NOT SURE, SKIP TO QUESTION 10
- [9] refused --IF REFUSED, SKIP TO QUESTION 10

9. What was the nature of the problem? (Open-ended response; INTERVIEWER—CHOOSE MOST APPROPRIATE CATEGORIE(S)) (Variable name: "Nature of coyote problem")

- [1] coyote near home
- [2] coyote threatened a pet
- [3] coyote threatened an adult
- [4] coyote threatened a child
- [5] nuisance behavior (e.g., in garbage; at bird feeder; ate pet's food)
- [6] other _____
- [9] refused to answer

10. Have you ever reported a coyote sighting or problem to some authority? (Variable name: "Reported sighting or problem")

- [1] yes
- [2] no -- IF NO, SKIP TO QUESTION 12
- [9] refused to answer

11. Who did you call to report the coyote? (INTERVIEWER: PICK THE MOST RELEVANT CATEGORY.) (Variable name: “Who they called about problem”)

- [1] animal control, animal warden
- [2] the police department
- [3] the New York State Department of Environmental Conservation (DEC), the Conservation Department, Game Warden, etc.
- [4] a person who specializes in removal of nuisance wildlife (e.g., pest/varmint control, nuisance wildlife control officer)
- [5] nature center or park
- [6] other (INTERVIEWER: PLEASE SPECIFY: _____)
- [9] refused to answer

12. Which one of the following statements best describes your feelings about coyotes in Westchester County? (Variable name: “Screen/Feelings about coyote”)

- [1] One, I enjoy knowing coyotes are around, AND I do NOT worry about problems coyotes may cause. **(SKIP TO QUESTION 29)**
- [2] Two, I enjoy knowing coyotes are around, BUT I worry about problems coyotes may cause. **(CONTINUE WITH FULL INTERVIEW)**
- [3] Three, I do not enjoy knowing coyotes are around and regard them as a nuisance. **(CONTINUE WITH FULL INTERVIEW)**
- [4] Or four, I have no particular opinions about coyotes in Westchester. **(SKIP TO QUESTION 29)**
- [9] refused to answer

13. In general, how would you characterize your level of interest in coyotes? (Variable name: “Interest in coyote”)

- [1] no interest
- [2] some interest
- [3] a great deal of interest
- [9] refused to answer

Now I’m going to read 6 statements about coyotes, and I’d like you to tell me whether you agree, disagree, or are unsure about each statement. Here is the first one...

(INTERVIEWER: FOR Q14 - Q19 ASK IF RESPONDENT AGREES, DISAGREES OR IS UNSURE. IF THEY AGREE OR DISAGREE, ASK FOLLOW-UP QUESTION –“DO YOU AGREE OR AGREE STRONGLY?” OR “DO YOU DISAGREE OR DISAGREE STRONGLY?”

14. I am pleased that coyotes live in my area. (Variable name: "Pleased to have coyote")

- [1] agree strongly
- [2] agree
- [3] disagree
- [4] disagree strongly
- [3] unsure
- [9] refused to answer

15. Coyotes are a valuable part of the wildlife that live in my area. (Variable name: "Coyotes are valuable")

- [1] agree strongly
- [2] agree
- [3] disagree
- [4] disagree strongly
- [3] unsure
- [9] refused to answer

16. I am concerned about the presence of coyotes in my area. (Variable name: "I am concerned about coyotes")

- [1] agree strongly
- [2] agree
- [3] disagree
- [4] disagree strongly
- [8] unsure
- [9] refused to answer

17. The likelihood that a pet will be injured by a coyote in Westchester County acceptably low. (Variable name: "Likelihood of pet injury")

- [1] agree strongly
- [2] agree
- [3] disagree
- [4] disagree strongly
- [8] unsure
- [9] refused to answer

18. The likelihood that a person in Westchester County will be injured by a coyote is acceptably low. (Variable name: "Likelihood of human injury")

- [1] agree strongly
- [2] agree
- [3] disagree
- [4] disagree strongly
- [8] unsure
- [9] refused to answer

19. Have you ever been in a situation in Westchester County where you felt a pet might be harmed by a coyote? (Variable name: "Ever felt pet threat")

- [1] yes
- [2] no
- [9] refused to answer

20. Have you ever been in a situation in Westchester County where you felt you or a family member might be harmed by a coyote? (Variable name: "Ever felt human was threatened")

- [1] yes
- [2] no
- [9] refused to answer

21. How would you describe your level of concern about the threat coyotes might present to pets in your area? (Variable name: "Concern about pet threat")

- [1]no concern
- [2]some concern
- [3] a great deal of concern
- [9] refused to answer

22. How would you describe your level of concern about the threat coyotes might present to small children in your area? (Variable name: "concern about human threat")

- [1]no concern
- [2]some concern
- [3] a great deal of concern
- [9] refused to answer

I will now ask you a series of questions about coyote presence in various locations in Westchester County. Please choose the answer that best describes your feelings about each situation.

23. If you occasionally observe coyotes in natural areas or green spaces within Westchester County, would you: (Variable name: "Concern if in natural areas")

- [1] be pleased
- [2] not care
- [3] be concerned
- [9] refused to answer

24. (Variable name: "Concern if occasionally observe")If you occasionally observe coyotes within your town, would you

- [1] be pleased
- [2] not care
- [3] be concerned
- [9] refused to answer

25. (Variable name: "Concern if regularly observe")If you regularly observe coyotes within your town would you

- [1] be pleased
- [2] not care
- [3] be concerned
- [9] refused to answer

26. (Variable name: "Concern if regularly hear")If you regularly hear coyotes howling less than a mile from your home, would you

- [1] be pleased
- [2] not care
- [3] be concerned
- [9] refused to answer

27. (Variable name: "Concern if occasionally in yard")If you occasionally observe coyotes passing through your backyard, would you

- [1] be pleased
- [2] not care
- [3] be concerned
- [9] refused to answer

28. (Variable name: "Concern if regularly in yard") If you regularly observe coyotes in your backyard, would you

- [1] be pleased
- [2] not care
- [3] be concerned
- [9] refused to answer

29. Before I called you today, were you aware of any incidents of coyotes harming pets or children in Westchester County in the past year? (Variable name: "Westchester incident past year")

- [1] yes
- [2] no --IF NO, SKIP TO QUESTION 32
- [8] don't know --SKIP TO QUESTION 32
- [9] refused to answer -- SKIP TO QUESTION 32

30. Were you aware that two children in the Town of Rye, New York had been injured by coyotes in July 2010? (Variable name: "Rye incident awareness")

- [1] yes
- [2] no --IF NO, SKIP TO QUESTION 32
- [8] don't know --SKIP TO QUESTION 32
- [9] refused to answer -- SKIP TO QUESTION 32

31. Do you know about the coyote-related incidents in Rye:

31a. From news reports about coyotes (Variable name: "Aware from news")

- [1] yes
- [2] no
- [8] not sure
- [9] refused

31b. By talking with other people (like friends, family, neighbors) (Variable name: "Rye Aware from other people")

- [1] yes
- [2] no
- [8] not sure
- [9] refused

31c. Other (Variable name: " Rye Aware from other source")

- [1] yes --(IF YES) HOW? 31d. _____
- [2] no
- [8] not sure
- [9] refused

Because we want to understand opinions from different people all across Westchester County, I would like to ask you a few questions that will help us learn whether people of different ages, neighborhoods, and so on have different opinions about coyotes.

32. What was your age on your last birthday? (Variable name: "Age")

____ (Valid range: 18 -99)

[9] refused to answer

33. Which best describes the area where you live? (Variable name: "Area where R lives")

[1] A town or city with many people

[2] A suburb with many people/houses and some green space

[3] An area outside a town with scattered houses and a great deal of green space

[9] refused to answer

34. What is the highest year of school you have completed? (Variable name: "Education level")

[1] Less than high school

[2] Completed high school or GED

[3] Vocational or trade school

[4] some college

[5] two-year degree

[6] four-year degree

[7] graduate school

[9] refused to answer

35. Do any children age 6 or younger live in your household? (Variable name: "children in household")

[1] yes

[2] no

[9] refused to answer

36. Is there a pet dog in your household? (Variable name: "Pet in household")

[1] yes --IF YES, GO TO QUESTION 34b

[2] no --IF NO, GO TO QUESTION 35

[9] refused to answer

36b. Is the dog less than 40 pounds? (Variable name: "Wt of dog")

[1] greater than 40lbs

[2] less than 40lbs

[8] unsure

[9] refused to answer

37. Is there a pet cat in your household? (Variable name: "Cat in household")

- [1] yes --IF YES, GO TO QUESTION 35b
- [2] no --IF NO, SKIP TO QUESTION 36

[9] refused to answer

38. Does the cat spend any time outside? (Variable name: "Outdoor cat")

- [1] yes
- [2] no
- [8] unsure
- [9] refused to answer

In which of the following activities do you regularly participate?

39. Do you feed birds or other wildlife around your home? (Variable name: "Bird feeding")

- [1] yes
- [2] no
- [9] refused to answer

40. Have you gone hunting in the past 5 years? (Variable name: "Hunting")

- [1] yes
- [2] no
- [9] refused to answer

That concludes our survey. Thank you very much for your time and patience in answering these questions. Your answers will be kept strictly confidential.

41. [DO NOT ASK] Sex of respondent [CIRCLE ONE] (Variable name: "Sex")

- [1] male [0] female

Appendix B: Questionnaire, 2011 Telephone Survey

My name is _____. I am calling on behalf of Cornell University. We're contacting **Westchester County** residents for a study of **attitudes about coyotes**.

May I please talk to the adult who celebrated (his/her) birthday most recently?

As part of our effort to understand relationships between people and wildlife in Westchester County, I'd like to ask you a few questions to understand your opinions about coyotes. Would you be willing to participate in an interview on this topic? Your participation is voluntary, the information you provide is confidential, and none of it will be released in any way that would permit the identification of you or your family. It would take 5 to 15 minutes for the interview, depending upon your experiences.

- [1] yes, proceed
- [2] interview declined

1. About how many years have you lived in Westchester County? (Variable name: "Years living in WC") (INTERVIEWER: Let person respond, then place response in correct category)

- [1] Less than 1 year
- [2] 1-5 years
- [3] 6-10 years
- [4] 11-20 years
- [5] 21 or more years
- [8] don't know
- [9] refused to answer

2. Before I called you today, were you aware that coyotes live in New York State? (Variable name: "Aware of coyotes in NY")

- [1] yes
- [2] no --IF NO, SKIP TO QUESTION 12
- [8] don't know --SKIP TO QUESTION 12
- [9] refused to answer -- SKIP TO QUESTION 12

3. Were you aware that coyotes live in Westchester County? (Variable name: "Aware of coyotes in WC")

- [1] yes
- [2] no -- IF NO, SKIP TO QUESTION 12
- [8] don't know -- SKIP TO QUESTION 12
- [9] refused -- SKIP TO QUESTION 12

4. Do you know about coyotes in Westchester County:

4a. From news reports about coyotes (Variable name: "Aware from news")

- [1] yes
- [2] no
- [8] not sure
- [9] refused

4b. By talking with other people (like friends, family, neighbors) (Variable name: "Aware from other people")

- [1] yes
- [2] no
- [8] not sure
- [9] refused

4c. Through personal experience (hearing or seeing a coyote) (Variable name: "Aware from personal experience")

- [1] yes
- [2] no
- [8] not sure
- [9] refused

4d. Other (Variable name: "Aware from other source")

- [1] yes --(IF YES) HOW? 4e. _____
- [2] no
- [8] not sure
- [9] refused

5. Have you ever seen a coyote anywhere in Westchester County? (Variable name: "Ever seen coyote in WC")

- [1] yes
- [2] no -- IF NO, SKIP TO QUESTION 12
- [8] not sure -- IF NOT SURE, SKIP TO QUESTION 12
- [9] refused -- IF REFUSED, SKIP TO QUESTION 12

6. How many times have you seen coyote/s in Westchester County in the past 3 years? (Variable name: "# times saw a coyote")

- [1] once or twice
- [2] a few times (3-4)
- [3] more than a few times/regularly
- [8] not sure
- [9] refused

7. Have you ever seen a coyote near your residence in Westchester County? (Variable name: "Seen coyote near residence")

- [1] yes
- [2] no
- [3] not sure
- [9] refused

8. Have you ever had a problem with a coyote near your home in Westchester County? (Variable name: "Had problem with coyote")

- [1] yes
- [2] no --IF NO, SKIP TO QUESTION 10
- [8] not sure --IF NOT SURE, SKIP TO QUESTION 10
- [9] refused --IF REFUSED, SKIP TO QUESTION 10

9. What was the nature of the problem? (Open-ended response; INTERVIEWER—CHOOSE MOST APPROPRIATE CATEGORIE(S)) (Variable name: "Nature of coyote problem")

- [1] coyote near home
- [2] coyote threatened a pet
- [3] coyote threatened an adult
- [4] coyote threatened a child
- [5] nuisance behavior (e.g., in garbage; at bird feeder; ate pet's food)
- [6] other _____
- [9] refused to answer

10. Have you ever reported a coyote sighting or problem to some authority? (Variable name: "Reported sighting or problem")

- [1] yes
- [2] no -- IF NO, SKIP TO QUESTION 12
- [9] refused to answer

11. Who did you call to report the coyote? (INTERVIEWER: PICK THE MOST RELEVANT CATEGORY.) (Variable name: “Who they called about problem”)

- [1] animal control, animal warden
- [2] the police department
- [3] the New York State Department of Environmental Conservation (DEC), the Conservation Department, Game Warden, etc.
- [4] a person who specializes in removal of nuisance wildlife (e.g., pest/varmint control, nuisance wildlife control officer)
- [5] nature center or park
- [6] other (INTERVIEWER: PLEASE SPECIFY: _____)
- [9] refused to answer

12. Which one of the following statements best describes your feelings about coyotes in Westchester County? (Variable name: “Screen/Feelings about coyote”)

- [1] One, I enjoy knowing coyotes are around, AND I do NOT worry about problems coyotes may cause. **(SKIP TO QUESTION 29)**
- [2] Two, I enjoy knowing coyotes are around, BUT I worry about problems coyotes may cause. **(CONTINUE WITH FULL INTERVIEW)**
- [3] Three, I do not enjoy knowing coyotes are around and regard them as a nuisance. **(CONTINUE WITH FULL INTERVIEW)**
- [4] Or four, I have no particular opinions about coyotes in Westchester. **(SKIP TO QUESTION 29)**
- [9] refused to answer

13. In general, how would you characterize your level of interest in coyotes? (Variable name: “Interest in coyote”)

- [1] no interest
- [2] some interest
- [3] a great deal of interest
- [9] refused to answer

Now I’m going to read 6 statements about coyotes, and I’d like you to tell me whether you agree, disagree, or are unsure about each statement. Here is the first one...

(INTERVIEWER: FOR Q14 - Q19 ASK IF RESPONDENT AGREES, DISAGREES OR IS UNSURE. IF THEY AGREE OR DISAGREE, ASK FOLLOW-UP QUESTION –“DO YOU AGREE OR AGREE STRONGLY?” OR “DO YOU DISAGREE OR DISAGREE STRONGLY?”

14. I am pleased that coyotes live in my area. (Variable name: “Pleased to have coyote”)

- [1] agree strongly
- [2] agree
- [3] disagree
- [4] disagree strongly
- [3] unsure
- [9] refused to answer

15. Coyotes are a valuable part of the wildlife that live in my area. (Variable name: “Coyotes are valuable”)

- [1] agree strongly
- [2] agree
- [3] disagree
- [4] disagree strongly
- [3] unsure
- [9] refused to answer

16. I am concerned about the presence of coyotes in my area. (Variable name: “I am concerned about coyotes”)

- [1] agree strongly
- [2] agree
- [3] disagree
- [4] disagree strongly
- [8] unsure
- [9] refused to answer

17. The likelihood that a pet will be injured by a coyote in Westchester County acceptably low. (Variable name: “Likelihood of pet injury”)

- [1] agree strongly
- [2] agree
- [3] disagree
- [4] disagree strongly
- [8] unsure
- [9] refused to answer

18. The likelihood that a person in Westchester County will be injured by a coyote is acceptably low. (Variable name: "Likelihood of human injury")

- [1] agree strongly
- [2] agree
- [3] disagree
- [4] disagree strongly
- [8] unsure
- [9] refused to answer

19. Have you ever been in a situation in Westchester County where you felt a pet might be harmed by a coyote? (Variable name: "Ever felt pet threat")

- [1] yes
- [2] no
- [9] refused to answer

20. Have you ever been in a situation in Westchester County where you felt you or a family member might be harmed by a coyote? (Variable name: "Ever felt human was threatened")

- [1] yes
- [2] no
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21. How would you describe your level of concern about the threat coyotes might present to pets in your area? (Variable name: "Concern about pet threat")

- [1]no concern
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- [3] a great deal of concern
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22. How would you describe your level of concern about the threat coyotes might present to small children in your area? (Variable name: "concern about human threat")

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I will now ask you a series of questions about coyote presence in various locations in Westchester County. Please choose the answer that best describes your feelings about each situation.

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26. (Variable name: “Concern if regularly hear”)If you regularly hear coyotes howling less than a mile from your home, would you

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27. (Variable name: “Concern if occasionally in yard”)If you occasionally observe coyotes passing through your backyard, would you

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28. (Variable name: “Concern if regularly in yard”)If you regularly observe coyotes in your backyard, would you

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- [2] not care
- [3] be concerned
- [9] refused to answer

29. Before I called you today, were you aware of any incidents of coyotes harming pets or children in Westchester County in the past year? (Variable name: “Westchester incident past year”)

- [1] yes
- [2] no --IF NO, SKIP TO QUESTION 32
- [8] don’t know --SKIP TO QUESTION 32
- [9] refused to answer -- SKIP TO QUESTION 32

30. Were you aware that two children in the Town of Rye, New York had been injured by coyotes in July 2010? (Variable name: “Rye incident awareness”)

- [1] yes
- [2] no --IF NO, SKIP TO QUESTION 32
- [8] don’t know --SKIP TO QUESTION 32
- [9] refused to answer -- SKIP TO QUESTION 32

31. Do you know about the coyote-related incidents in Rye:

31a. From news reports about coyotes (Variable name: “Aware from news”)

- [1] yes
- [2] no
- [8] not sure
- [9] refused

31b. By talking with other people (like friends, family, neighbors) (Variable name: “Rye Aware from other people”)

- [1] yes
- [2] no
- [8] not sure
- [9] refused

31c. Other (Variable name: “Rye Aware from other source”)

- [1] yes --(IF YES) HOW? 31d. _____
- [2] no
- [8] not sure
- [9] refused

Because we want to understand opinions from different people all across Westchester County, I would like to ask you a few questions that will help us learn whether people of different ages, neighborhoods, and so on have different opinions about coyotes.

32. What was your age on your last birthday? (Variable name: “Age”)

_____ (Valid range: 18 -99)

[9] refused to answer

33. Which best describes the area where you live? (Variable name: “Area where R lives”)

[1] A town or city with many people

[2] A suburb with many people/houses and some green space

[3] An area outside a town with scattered houses and a great deal of green space

[9] refused to answer

34. What is the highest year of school you have completed? (Variable name: “Education level”)

[1] Less than high school

[2] Completed high school or GED

[3] Vocational or trade school

[4] some college

[5] two-year degree

[6] four-year degree

[7] graduate school

[9] refused to answer

35. Do any children age 6 or younger live in your household? (Variable name: “children in household”)

[1] yes

[2] no

[9] refused to answer

36. Is there a pet dog in your household? (Variable name: “Pet in household”)

[1] yes --IF YES, GO TO QUESTION 34b

[2] no --IF NO, GO TO QUESTION 35

[9] refused to answer

36b. Is the dog less than 40 pounds? (Variable name: “Wt of dog”)

[1] greater than 40lbs

[2] less than 40lbs

[8] unsure

[9] refused to answer

37. Is there a pet cat in your household? (Variable name: “Cat in household”)

- [1] yes --IF YES, GO TO QUESTION 35b
- [2] no --IF NO, SKIP TO QUESTION 36

[9] refused to answer

38. Does the cat spend any time outside? (Variable name: “Outdoor cat”)

- [1] yes
- [2] no
- [8] unsure
- [9] refused to answer

In which of the following activities do you regularly participate?

39. Do you feed birds or other wildlife around your home? (Variable name: “Bird feeding”)

- [1] yes
- [2] no
- [9] refused to answer

40. Have you gone hunting in the past 5 years? (Variable name: “Hunting”)

- [1] yes
- [2] no
- [9] refused to answer

That concludes our survey. Thank you very much for your time and patience in answering these questions. Your answers will be kept strictly confidential.

41. [DO NOT ASK] Sex of respondent [CIRCLE ONE] (Variable name: “Sex”)

- [1] male [0] female

